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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,570	06/27/2003	Akira Kikitsu	008312-0304515	4947
909	7590	12/23/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			BERNATZ, KEVIN M	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			1773	

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,570

Applicant(s)

KIKITSU ET AL.

Examiner

Kevin M. Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-27, 30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 28, 29 and 32 is/are rejected.
- 7) ☒ Claim(s) 28 and 32 is/are objected to.
- 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/27/03; 10/14/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Examiner's Comments

1. The Examiner notes that the language of claim 29 is slightly confusing, since it could mean that a total of 6 "first" and "second" magnetic layers are required, i.e. not less than 3 first and not less than 3 second, or a total sum of "first" and "second" magnetic layers being at least 3. The Examiner notes that applicants' specification appears to support the latter interpretation, and for the purpose of evaluating the prior art, the Examiner has interpreted claim 29 as requiring at least 3 "first" or "second" magnetic layers, alternately stacked.

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1 – 30 and 32 in the reply filed on June 30, 2005 is acknowledged. The traversal is on the ground(s) that there would be no serious burden to search the invention of Group II. This is not found persuasive since the examiner reminds applicant(s) that a separate classification is a *prima facie* showing of a serious burden (see MPEP § 803). In addition, while the search may be overlapping, there is no reason to believe the search would be coextensive. The requirement is still deemed proper and is therefore made FINAL.

Regarding the classification in 428/694TM, the Examiner notes that between the first restriction requirement and the pending action, the magnetic recording media subclasses in class 428 have been renumbered as subclasses 800+. The subject

matter of 694TM (i.e. thin film media with multiple magnetic layers) can now be found in 428/828+.

3. Applicant's election with traverse of species number 30 in the reply filed on October 13, 2005 is acknowledged. The traversal is on the ground(s) that there would be no serious burden to search the different species, that the Examiner "has not even alleged, let alone established, that the distinction between parallel and perpendicular orientation of the recording layer is separately classifiable", and that the "various interlayer structures are separately classifiable".

With regard to the argument of no serious burden, while the search may be overlapping, there is no reason to believe the search would be coextensive. The various species (all 55 of them) possess different overall structures of the recording medium, and hence would require unique searches for each structure. With regard to the separate "classifiability" of the distinction between parallel and perpendicular orientation or the various interlayer structure, the Examiner notes that separate "classifiability" is not required for species restrictions, hence rendering applicants' argument moot. Furthermore, should applicants' feel that the species are *not* patentably distinct, then applicants' have the ability to address this issue. As noted in the restriction requirement: "Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions

unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention”.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

4. Claims 28 and 32 are objected to because of the following informalities: “wherein the first and second magnetic recording layers interact each other” should be “wherein the first and second magnetic recording layers interact with each other”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 28, 29 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 28 and 32 recite the language “wherein the first and second magnetic recording layers interact with each other to make the magnetization directions thereof antiparallel” and also recite “and at least two of the first magnetic recording layer, interlayers M2 and M3, and second magnetic recording layer have antiferromagnetic exchange coupling”. Since antiferromagnetic exchange coupling *is* magnetization directions that are antiparallel to each other, the combined teaching is confusing. Do

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the first and second recording layers have to be antiparallel (i.e. possess antiferromagnetic exchange coupling), in which case the second limitation does not further limit the claim since "at least two" layers already are required to possess antiferromagnetic exchange coupling? Or does the second limitation control, that at least two of the layers must have antiferromagnetic exchange coupling (i.e. have orientations that are antiparallel)? For the purpose of evaluating the prior art, the Examiner has interpreted the claim as written, in that the first and second magnetic recording layers must be antiparallel, hence automatically reading on the additional limitation of "at least two of the first magnetic recording layer, interlayers M2 and M3, and second magnetic recording layer have antiferromagnetic exchange coupling".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 28, 29 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Girt (U.S. Patent No. 6,737,172 B1).

Regarding claims 28 and 32, Girt disclose a magnetic recording/reproducing apparatus (*col. 1, line 14 bridging col. 2, line 4*) comprising a magnetic recording medium having a nonmagnetic substrate (*Figure 3, element 10*), a first magnetic recording layer (*element 13₁*) formed on the nonmagnetic substrate, and a second magnetic recording layer formed on the first magnetic recording layer (*element 13_n*), a driving mechanism which supports and rotates the magnetic recording medium (*deemed inherent in the magnetic head disclosed by Girt – col. 1, line 14 bridging col. 2, line 4*), and a mechanism which applies a recording magnetic field to the recording magnetic medium (*deemed inherent in the magnetic head disclosed by Girt – col. 1, line 14 bridging col. 2, line 4*), wherein the first and second magnetic recording layers interact with each other to make the magnetization directions thereof antiparallel (*col. 9, line 66 bridging col. 10, line 8*), the axis of easy magnetization in each of the first and second magnetic recording layers is parallel to the plane of the layer (*col. 5, lines 10 – 17*), the magnetic layer further comprising interlayers M4/M2/M1 (*Figure 3, element 16 directly above layer 13₁, element 18_u directly below element 13₂ and the element 16 directly above element 13₂*) meeting applicants' claimed material and thickness limitations (*col. 1, lines 34 – 55; col. 4, lines 39 – 64; and col. 9, line 64 bridging col. 11, line 11*).

Regarding claim 29, Girt disclose a plurality of alternating magnetic layers (elements 13₁, 13₂, 13₃, etc) meeting applicants' claimed limitations (*Figure 3 and col. 9, line 64 bridging col. 10, line 8*). The Examiner notes that $n \geq 5$ will result in sufficient magnetic layers "13" to meet the claimed limitations in combination with the above

defined interlayer structure (since between each "set" of magnetic layers, there must exist an interlayer structure of M4/M2/M1).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Girt as applied above.

Girt is relied upon as described above.

Girt fails to explicitly disclose the nominal apparatus limitations in claim 32.

However, the Examiner takes official notice that it is known in the art to provide a recording and reproducing apparatus with "a driving mechanism" and "a mechanism with applies a recording magnetic field", inorder to rotate a disk-shaped medium relative to a magnetic head which provides a recording magnetic field inorder to read and/or write to the recording medium

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Girt to utilize a recording and reproducing apparatus meeting the nominal apparatus limitations since it is well recognized by one of ordinary skill in the art that such components are necessary for a

magnetic recording and reproducing device to read and write to a disk-shaped recording medium.


Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
December 18, 2005


Kevin M. Bernatz, PhD
Primary Examiner